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The tables of Sang have been calculated on the same principle; and, indeed, there is no other method practicable. How would Mr. Farren, according to his own plan, solve the following problem:—

s = sum,
 d = rate of interest,
 a = amount,
 x = period or duration.

In what time will the sum s amount to a , at d compound interest?

HERSCHELL FILIPOWSKI.

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REVIEWS OF NEW WORKS.

Actuarial Tables, Carlisle Three per Cent., Single Lives, and Single Deaths; with Auxiliary Tables. By WILLIAM THOMAS THOMSON, F.R.S.E., F.I.A., Manager of the Standard Life Assurance Company, and of the Colonial Life Assurance Company. Edinburgh: R. & R. Clark. 1853.

OUR Scottish neighbours are certainly indefatigable in their exertions for the cause of life assurance. The Carlisle Table literally groans under their folio, quarto, and octavo labours. Already we have the works of Edward Sang, Peter Gray, William Orchard, Ambrose Smith, and Benjamin Hall Todd; and now once again we have a set of actuarial tables from the pen of Mr. Thomson—a pen that really seems untiring, if we remember that already we have upon the wall, or in a portfolio, a sheet set of tabular results industriously calculated by the same gentleman. The question of *cui bono*, however, trite as it may appear, still calls for reply, and we are afraid that in the response Mr. Thomson will not, generally speaking, find that appreciation of his indomitable perseverance which it fairly demands. All secondary tables necessarily partake of the character of the primary table upon which they are founded; and great as are the excellences of the Carlisle Table in its general indications, its graduation is avowedly so faulty as to call loudly for ratification. Had Mr. Thomson achieved this upon scientific principles before undertaking his laborious task, we feel confident that his new tables would have almost wholly displaced those of his predecessors. Nevertheless, the book as it is is a highly valuable one, for, independently of the actual results, it comprises a most intelligent introduction, interspersed with several very useful hints as to the means of checking calculations. One of these is so ingenious, and so candidly mentioned in connection with the names of two concurrent computers, Messrs. Filipowsky and Gray, that we think it well to reproduce it for the benefit of our readers, referring them to the work itself as a perfect mass of proof of the success of the method.

The principle of the process is simply this—that as the logarithm of unity is zero, therefore the multiplication of reciprocals, when reduced to logarithms, necessarily produces zero. Thus, if the present value of £1,

due n years hence, be considered as put out at interest for n years in succession, it is obvious that at the n th it will become £1, of which the logarithm is zero. In like manner, if the probability of living n years be taken and be multiplied by the reciprocal probability for each year, it is also clear that the sum of the logarithms will be zero, for $\log. (1)^n = 0$.

The work is beautifully got up in quarto, and reflects no less degree of credit upon the author's printers than upon himself.

Popular Tables, arranged in a new form, giving information at sight for ascertaining, according to the Carlisle Table of Mortality, the value of Lifehold, Leasehold, and Church Property, Renewal Fines, &c.; the Public Funds, Annual Average Price and Interest on Consols from 1731 to 1851; also, various interesting and useful Tables, equally adapted to the Office and the Library Table. By CHARLES M. WILlich, Actuary and Secretary to the University Life Assurance Society. Third Edition. London: Longman, Brown, Green, & Longmans. 1852.

THOSE who are in the habit of referring daily to the class of tables above described, will find this one of the most useful and practical works of the kind. It is not encumbered with a multitude of tables which are only occasionally consulted, and therefore recommends itself the more to that numerous class of educated persons who, requiring an estimate of the value of property on lives or leases, and of fines for renewals, can find the results sufficiently near for all practical purposes. Two very useful tables will be found in pp. 55 to 59, for renewing with one or two lives a lease originally granted on three. In all these cases the Carlisle Table is used, as more nearly representing (the author appears to think) the general mortality than any other in general use, notwithstanding certain well known imperfections in it. Another very convenient table is one contributed by Mr. Peter Hardy, enabling those "who wish to enjoy a certain high rate of interest on their investments, while from the state of the money market they can only reinvest the surplus income at a low rate of interest in order to replace the capital expended," to ascertain the present worth of a lease, estate, or annuity, at different rates of interest. Amongst the miscellaneous tables will also be found a great variety of interesting matter, constantly sought after, relating to such subjects as income tax, calculation of wages, the average price of the Funds and the interest they have produced for the last 120 years, tithe commutation, coins and currency, weights and measures of different countries, and scientific constants; and a short but very convenient table of logarithms.

In the third edition Mr. Willich has introduced a table of hyperbolic logarithms, extending to them a new method proposed by him in the first, for obtaining logarithms of high numbers without trouble and with perfect accuracy; also some trigonometrical, astronomical, and chronological tables, concluding with a very curious one, affording easy means of extracting the roots of perfect cube numbers not exceeding nine digits, and supposed to involve the method by which the so called American calculating boy achieved that operation with such surprising facility. Mr. Willich's labours appear to have received the approval of some of our most eminent mathematicians; and that they are highly appreciated by the public is, we think, sufficiently evidenced by the fact that a work of this peculiar kind has already reached a third edition.